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almost solely on the writings of other authors, notably those of his associate and close friend, Peter Artedi, the "father of ichthyology." There was, however, in Linnæus's possession a small collection of fish skins, the most important of these containing seventy-one species, having been sent from Charleston, South Carolina, by Dr. Alexander Garden.

Most of this collection is now preserved in the Collection of the Linnæan Society of London. Dr. Albert Günther, president of this society, in a recent address, has given an account of each of these specimens. This account is in greater detail than one given in 1886 by Messrs. Goode and Bean, and some of its conclusions have an important bearing on the nomenclature of North American fishes.

The examinations of Dr. Günther necessitate the following changes from the names lately accepted by Jordan and Evermann: *Felichthys felis* (Linnæus) for the Gaff topsail catfish, instead of *Ailurichthys marinus* (Mitchill); *Galeichthys milberti* (Cuv. and Val.), instead of *G. felis*; if Dr. Günther's identification of *Siluris felis* is correct, which we cannot doubt, it is strange that Linnæus counted six barbels when but four exist; *Epinephelus guttatus* (Linnæus), instead of *E. maculosus* Cuv. and Val. (*lunulatus*, *apua*, and *catus* of authors); *Promicrops itaiara* (Lichtenstein), instead of *P. guttatus*.

Dr. Günther shows that in forming his complex *Perca guttata*, Linnæus had a specimen in hand from which his color notes were drawn. Excluding erroneous synonyms, this specimen may be regarded as the typical *P. guttata*. Dr. Günther notes that *Stellifer lanceolatus* has the downward directed spine of the subgenus *Zestidium*. He, however, wrongly identifies it with the type of the latter group, *S. illecebrosus*, from Panama. The two species differ notably in numbers of fin rays and gill rakers.

Besides these specimens, we may note that Dr. Einar Lönnberg has given a supplementary account of the Linnæan fishes in the University of Upsala. The original type of *Exocætus volitans* is the flying fish called *Halocypselus evolans*, as indeed the description indicates. *Exocætus* is therefore the right name for the group of flying fishes having short ventrals, the *Halocypselus* of Weinland, while the name *Cypselurus* of Swainson is revived for the large flying fishes.

D. S. J.

Meek on the Fishes of Lake Muskoka. — In the publications of the Field Columbian Museum of Chicago, Dr. Seth E. Meek has notes on the fishes of Lake Muskoka at Gravenhurst, Ontario. One

new species, *Notropis muskoka*, is described. This species is of the subgenus *Chriope*, an ally of *N. cayuga*. *Etheostoma boreale*, described by Jordan from Montreal in 1884, and not since seen, has been rediscovered by Dr. Meek in Gull Lake, near Lake Muskoka. D. S. J.

Function of Vascular Ampullæ in Composite Tunicates. — The colonial blood vessels of the composite tunicates belonging to the family Botryllidæ often show a considerable number of terminal enlargements — the ampullæ. These are found almost anywhere within the colony, but are especially numerous along its edges. They have been regarded without much reason as developing zoöids, an opinion generally abandoned for several more recent views; namely, that they are reservoirs for blood, organs for the excretion of the test matrix, or for respiration. Dr. F. W. Bancroft¹ has shown that they normally execute coördinated pulsations, which continue, with some change in the coördination, after separation from the rest of the colony. The rhythm of the ampullar pulsations is not affected by the reversals of the hearts in the zoöids. The pulsations are very slow, and the contractile tissue seems to be a thin layer of pavement epithelium. Such coördination as the ampullæ show is brought about principally by blood pressure. In an æstivating colony of *Botrylloides gascoi*, the circulation was kept up almost entirely by the ampullæ. They must, therefore, be regarded as organs for the propulsion of the blood.

G. H. P.

Sense Cells in the Integument of Worms. — L. Atherton² has made a study of the integument of the fresh-water worm *Tubifex*, with special reference to its nervous structures. The epidermis, beneath which there is no basement membrane, is usually a single layer of cells, produced apparently from the growing zone at the caudal end of the worm. Sensory cells of a spindle shape, or more swollen, occur isolated, in loose groups, or as well-defined clusters; externally they are provided with sensory bristles, and internally they give rise to nerve fibres, which extend to the central nervous organs. Isolated sensory cells are numerous over the caudal end, sparse over the middle trunk region, and numerous again over the anterior part, where they may bear more than a single sensory bristle. Loose

¹ Bancroft, F. W. A New Function of the Vascular Ampullæ in the Botryllidæ, *Zool. Anzeiger*, Bd. xxii, pp. 450-462.

² Atherton, L. The Epidermis of *Tubifex rivulorum* Lamarck, with Especial Reference to its Nervous Structures, *Anat. Anzeiger*, Bd. xvi, pp. 497-509.